

BUILDING HEALTHY CITIES



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Makassar Health Needs Assessment

September 2018

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ACRONYMS

BHC	Building Healthy Cities
BPJS	Badan Pelaksana Jaminan Sosial (Social Security Administrative Body for Health)
DALY	disability adjusted life years
FGD	focus group discussion
ICT	information and communications technology
IOM	International Organization for Migration
IUWASH	Indonesia Urban Water, Sanitation, and Hygiene project
JKN	<i>Jaminan Kesehatan Nasional</i> (National Social Health Insurance Scheme)
JSI	JSI Research & Training Institute, Inc.
KII	key informant interview
NCD	noncommunicable disease
NGO	nongovernmental organization
PwC	PricewaterhouseCoopers Pvt Ltd
RISE	Revitalizing Informal Settlements and their Environments project
RISKESDAS	<i>Riset Kesehatan Dasar</i> (National Health Research)
RT	<i>rukun tetangga</i> (type of local administrator)
RW	<i>rukun warga</i> (type of local administrator)
UKM	<i>Upaya Kesehatan Masyarakat</i> (community health efforts)
UKP	<i>Upaya Kesehatan Perorangan</i> (individual health efforts)
USAID	United States Agency for International Development
WASH	water, sanitation, and hygiene
WHO	World Health Organization

PREAMBLE: BUILDING HEALTHY CITIES

BASELINE ASSESSMENT STRATEGY

Building Healthy Cities (BHC) is a three-year (2017–2020), United States Agency for International Development (USAID)-funded learning project conducted in three cities in India, Indonesia, and Vietnam. Implemented by JSI Research & Training Institute, Inc. (JSI) with the Urban Institute, International Organization for Migration (IOM), and PricewaterhouseCoopers Pvt Ltd. (PwC), BHC aims to increase the understanding of the best routes to improve the social determinants of health in urban contexts. In year 1 of this project, in each city, BHC is conducting several exploratory data collection activities to inform the approach. The resulting data will be validated and used by city stakeholders to define barriers to implementation, unintended consequences, and key leverage points to improve urban health. Based on the current understanding of Smart City activities and city contexts, BHC has identified questions and data collection approaches best suited to answer them. Figure 1 provides an overview of which questions will be answered by each activity.

Figure 1: Overview of BHC Year 1 Exploratory Assessments

	Secondary Survey Analysis (Quantitative)	Health Needs Assessment (HNA) (Qualitative)	Political Economy Analysis (PEA) (Qualitative)	Data Use Assessment (DUA) (Qualitative)
What are the health needs & burdens?	Included	Included		
What health services are available & to whom?		Included		
Who is underserved by current health & city services?		Included		
How are non-health sectors engaging in building a healthy environment?		Included		
How are health & Smart Cities being coordinated, managed, and financed?		Included		
Who makes the decisions about coordination, management and financing?			Included	
What is the functionality and equity of the coordination, management and financing systems?			Included	
What is the inter- and intra-sectoral functionality of information systems?				Included
What are the barriers to equitable service provision and a healthy environment within this city and system?		Included	Included	Included
What are the data and information barriers to coordination and management across sectors and actors?				Included
What are the opportunities to improve citizen agency & equity of service provision?			Included	Included

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These data are only a beginning. BHC's continual process monitoring will follow changes in the themes emerging from this initial inquiry. These updates will be shared via multiple channels. Please check back on [BHC's website](#) for new reports and updates on our cities.

EXECUTIVE SUMMARY

Full citations for any secondary data cited in the Executive Summary can be found in the main text of this report.

Indonesia's urban population is expected to increase by nearly 40 percent by 2035, highlighting a pressing need for innovative strategies to address the predicted and emerging challenges in urban health. The Smart City program is one way the Government of Indonesia is preparing for a sustainable and healthy future.

JSI Research & Training Institute, Inc. (JSI), as part of the United States Agency for International Development (USAID)-funded Building Healthy Cities (BHC) project, conducted a health needs assessment to understand access, barriers, knowledge, and opportunities for healthy living in Makassar, as well as multisectoral activities in health and urban planning within Makassar's Smart City program.

I. Methodology

Data collection methods for this assessment included key informant interviews with 42 respondents including government officials, health care providers, and civil society organizations; focus group discussions with citizens in three socio-economically diverse neighborhoods; direct observations at six health care facilities; and a desk review.

The assessment was designed to answer questions relating to the following themes:

1. Structure of the health sector and available services in Makassar
2. Barriers to healthy lifestyles among underserved populations
3. Coordination, management, and funding of Smart City Makassar
4. Health engagement by city officials

II. Results

Health sector and services in Makassar

At the time of data collection, Makassar had one centrally-funded "Class A" hospital (defined as offering all specialties and super-specialties) with 840 beds, one "Class B" hospital with 212 beds that was operated by the city government, and 24 private hospitals. A total of 224 private clinics (both for-profit and not-for-profit) operate in the city, along with 46 public primary health care centers called *puskesmas* (including two on fishermen islands), and 1,010 community-based health posts called *posyandu* at the neighborhood/sub-village level. The Makassar city government has established a Home Care program that uses 48 vans to provide enhanced primary care services for all city residents. Home Care services are free-of-charge and available 24 hours a day 7 days a week.

The private sector fills service delivery and health worker gaps in Makassar. Services are provided at private hospitals by individual doctors, nurses, and midwives who work across both public and private clinics to supplement their income.

In 2014, the Indonesian Government launched its National Social Health Insurance Scheme (*Jaminan Kesehatan Nasional* or JKN), which aims to provide universal health coverage. JKN covers insurance premiums for those who fall in the bottom 40 percent of Indonesia's income distribution; formal workers' premiums are covered jointly by the employee and their employer. By law, all Indonesians must enroll in JKN by January 2019. Prior to JKN, since 2003, Makassar has provided coverage for all residents whose National ID lists the city as their place of residence.

At the time of writing, all government-run insurance schemes, including the JKD, have been integrated to BPJS/JKN. What the integration means in practice is that the budget to cover the poor in Makassar will continue to be covered by the budget allocated by the local government for the JKD, whereas the rest of the population will be covered through central government funding. There are currently 470 districts/cities in Indonesia that have integrated their Jamkesda (JKD) to BPJS.

Consequently, Makassar residents can access free basic health care services at puskesmas. A citywide study found that Makassar residents, including the urban poor, expressed general satisfaction with the health services offered at puskesmas. However, interview data suggest that equitable service delivery remained an issue. For example, national insurance cardholders must register on a separate floor and had longer wait times compared to patients who had private insurance. Puskesmas were also often over-crowded.

The introduction of JKN has further increased the number and variety of facilities where residents can seek care, as even private facilities are now empaneled with JKN. However, this assessment identified two groups among the urban poor who experienced difficulty accessing services: (1) Makassar city residents who did not have a National ID card at all and therefore could not enroll in JKN, and (2) Makassar city residents who had a National ID card that identified them as non-Makassar residents. Both groups lacked the necessary documentation showing a change in domicile that would allow them to access services in Makassar.

In terms of noncommunicable diseases (NCDs), tobacco smoking was a leading risk factor among Makassarese – as of 2013, 20.8 percent of the population in Makassar were smokers, most of which (97 percent) were men. The highest percentage of smokers (71 percent) were 15–45 years old. Other NCD risk factors identified in interviews were diet, with popular foods in Makassar high in fat and cholesterol, and the lack of physical activity. The most common communicable diseases in Makassar were tuberculosis, infections of the upper respiratory tract, diarrhea, and, particularly during the rainy season, dengue and typhoid.

Lack of dialysis centers for diabetes patients was a critical barrier for NCD services. The only four hospitals that offered dialysis at the time of this assessment were consistently at full capacity, with three shifts per day and 20–30 patients per shift.

Underserved populations

The assessment identified the following groups as having relatively low access to health-related services and healthy lifestyles: economic migrants, day laborers, island dwellers, women in informal settlements, out of school youth, unemployed living in informal settlements, and political migrants from outside of Indonesia. The barriers to healthy living among these populations included a lack of access to piped water, flooding that resulted from open clogged drains, lack of maintenance of septic tanks, and low levels of awareness on sanitation issues in general.

Smart City management, coordination, and funding

Makassar is currently one of 25 Smart Cities in Indonesia, though this number may expand to 100 by 2019. Smart City did not have a specific national budget line or a national mandate as of mid-2018. There is no national standardized definition for what makes a “smart city.” Therefore, using city budgets, the city government of Makassar has designed its own Smart City initiatives and innovations. The city government contributed 30 percent of the Smart City budget, with the remainder provided by the private sector and local communities’ participation. The Smart City office in Makassar is part of the Communications and Informatics Department and is managed by a Smart City Council. The Mayor is the head of the Governing Board of the Smart City Council. Thirteen government departments, seven universities, and three private sector entities are currently involved in the Smart City implementation team.

Makassar’s Smart City program envisions a future with eight objectives:

- No unemployment
- Universal health insurance
- Twenty-four hour free emergency medical care
- Free education allowing everyone to attend school
- Free skills training and microcredit programs¹
- Reducing trash and increasing the food safety net through the Trash for Rice initiative²
- Affordable city housing
- Living green with adequate foliage cover

¹ The Government of Makassar, through the Department of Labor, provides free skills training and job fairs for the unemployed. There is also a program that provides microcredit loans without collateral to help individuals start businesses.

² The “Trash for Rice” program enables city residents to exchange recyclable trash such as plastic, bottles, paper, iron, copper, etc. for rice, drinking water, or cash (e.g., a kilogram of plastic bottles fetches IDR 7,000, a kilogram of plastic bags fetches IDR 500, and a kilogram of carton boxes can fetch IDR 1,000 - 1,400).

As of 2018, the main priority of Smart City Makassar was infrastructure improvement of public transportation, roads, bridges, and pedestrian walkways, which are expected to have positive effects on the health of Makassar's residents. Direct improvements to health infrastructure appeared to be of medium-to-low priority.

Five government departments shared data with the Smart City office at the time of interviews: Planning, Revenue, Civil Registration, Health, and Financial and Asset Management. The health sector was the most engaged, but even this was limited as there is no existing regulation that requires data sharing. Smart City officials said that the amount of data sharing is limited because there is no regulation in place that allows system-wide data sharing across government sectors. Moreover, there is limited capacity within government departments to properly analyze data. For example, staff at only 14 out of 46 *puskesmas* have been trained on data health information systems. The Smart City only has access to data from one city hospital and the 46 *puskesmas* that are under its jurisdiction. There is currently no data sharing with private health providers.

Currently, 118 Smart City programs are being implemented in Makassar, with estimated completion by 2024.

Health engagement

As of 2018, two ongoing nationally-supported government programs in Makassar take a multisectoral approach to health. The first, Healthy Cities, began in Makassar in 2005 and conducts health promotion and health prevention activities. A national award is granted each year for the healthiest city, with Makassar receiving that award for three consecutive years: 2015, 2016, and 2017. This program has historically had little connection with the Smart City initiatives in Makassar; no data were shared with Smart City, nor did this division use any data generated by Smart City. According to KIIs, the division involved in the Healthy Cities program had limited connection with the Smart City initiatives in Makassar, no data was currently being shared with Smart City, nor did this division use any data generated by Smart City. Having said that, in Makassar, innovations from any department (including health) are viewed as being a critical part of the Smart City program. Some civil servants are involved in both the Healthy Cities and the Smart City program. Therefore, Smart City programs such as 24-hour homecare, Healthy Alley and Garden Alley are coordinated with the Department of Health officials.

The second program, Total Sanitation, implements activities related to reducing open defecation, food security, handwashing, solid waste management, and domestic waste water treatment.

III. Knowledge Gaps

The findings from this assessment identify gaps in information that the Makassar Smart City program and BHC can explore jointly filling over the next two years. Knowledge gaps will also be identified in BHC's *Political Economy Analysis* and *Data Use and Access Assessment*. Therefore, the gaps included here should be considered in addition to those identified by other assessments.

First, little information was found on the quality of care in Makassar's health sector. Findings from such research, with standard health outcome data, can be used to judge what, if anything, needs to be done to adjust trends in care for the urban poor. Second, more research is needed to determine whether the introduction of JKN has affected community health prevention and promotion activities in Makassar, as findings from other cities suggest has been the case. Third, there were key gaps in data quality, (e.g. routine health data did not include meaningful causes of mortality). Fourth, clogged, overflowing drains were a critical problem for the urban poor in Makassar who live in flood-prone areas. More research is needed to resolve whether the problem is due to the infrastructure of drainage networks, the persistence of negative behaviors (such as throwing garbage into the drains), or a combination. Fifth, interview respondents did not identify air pollution as a serious issue for Makassar, stating that there were no major factories in the area. Makassar did not have a facility for monitoring air quality at the time of interviews. More research is needed to determine why serious attention is not being paid to air pollution in Makassar.

The findings from this assessment will be triangulated with findings from BHC's other studies examining the political economy and data use among Makassar's residents. The studies will be used to support city government to assess vulnerabilities, barriers, and opportunities for improvement. BHC will work with city officials through 2020 to fill knowledge gaps and identify opportunities for engagement.

1. INTRODUCTION

Urban living can offer increased proximity to health services, but many urban dwellers still find it difficult to access basic care, which results in an increased risk of contracting communicable diseases. The risk of noncommunicable diseases (NCDs) also increases in urban areas due to barriers to healthy living. Beyond the risk of NCDs, urbanization significantly impacts the social determinants of health, defined as those things outside the control of individuals that affect daily living conditions and ultimately health outcomes. The World Health Organization (WHO) has identified several sectors that affect an individual's health: housing, energy, education, transport, green/recreational spaces, and social protection schemes (WHO 2018).

Given that Indonesia's urban population is expected to grow from 146.9 million in 2018 to 203.5 million in 2035 (Jones 2013), there is an urgent need to develop innovative strategies to address predicted and emerging challenges. The Smart City program (see Box 1) is just one way the Government of Indonesia is working to prepare for sustainable, healthy future growth.

This health needs assessment was conducted by JSI Research & Training Institute, Inc. (JSI), as part of the United States Agency for International Development (USAID)-funded Building Healthy Cities (BHC) project. The purpose of the assessment was to understand access, barriers, knowledge, and opportunities for healthy living in Makassar across a range of stakeholders, and to investigate multisectoral activities related to health and urban planning within Makassar's Smart City Initiative.

Box 1. What Does It Mean to Be a Smart City in Indonesia?

In May 2017, the Government of Indonesia launched a plan to develop 100 Smart Cities by 2019, starting with 24 cities in the first phase. Smart Cities are expected to leverage information and communications technology to improve the quality of life of citizens through efficient and effective allocation of regional resources, increased public participation and transparency, an increase in non-cash transactions, and improvements in public transportation, waste management, road congestion, pollution, energy, security, data, and information (Ministry of Communications and Informatics 2017).

Currently, Smart Cities do not have nationwide regulations, norms, or standards. Instead, cities are expected to allocate their city budgets for Smart City development, as well as raise a budget from external donors.

The national government assists in developing a master plan for each city.

2. METHODOLOGY

I. Selection of Makassar

Makassar, with a population of 1.7 million (as of 2017), is the fifth largest city in Indonesia. It is a trading center, the most urbanized part of eastern Indonesia, and is the provincial capital of South Sulawesi Island. Nearly half of the economy of South Sulawesi is concentrated in Makassar. McKinsey Global Institute labels Makassar as a “small middleweight city” (urban populations less than 2 million) and among the fastest-growing within this category. The city is expected to double its current population by 2030 (Oberman et al. 2012). Makassar was chosen by BHC, after discussion with local government, due to its population size, potential for growth, and Smart City activities. Along with Indore, India and Da Nang, Vietnam, it acts as a project learning site for developing effective urban health interventions.

II. Assessment Objectives and Questions

The objectives of this assessment were to:

1. Understand the current status of access, barriers, knowledge, and opportunities for healthy living in Makassar, based on information from a range of stakeholders.
2. Explore the compatibility of a “healthy communities” approach with the Smart City program.
3. Understand the existing status of multisectoral activities related to health and urban planning in Makassar.

The assessment was designed to answer questions relating to the following themes:

1. *Health sector and services*: How is the health system organized? What health services are currently provided in the city (with emphasis on prevention and lifestyle-related disease)? How does the health sector promote healthy lifestyles?
2. *Underserved populations*: Whose voices may be marginalized in this context? Who are the current representatives of underserved or marginalized populations?
3. *Coordination, management, and funding*: How are city services (including health) coordinated, selected, funded, and distributed, especially within the Smart City structure? Which sectors and stakeholders are represented in these choices?
4. *Health engagement*: How receptive are city officials and municipal decision-makers to improving healthy lifestyles in their communities?

This report is organized around these key themes.

III. Data Collection and Analysis

BHC completed interviews in Makassar in April 2018. Data were collected via key informant interviews (KIIs), focus group discussions (FGDs), direct observation, and a

desk review. These methods were used to reach saturation on the key themes and to triangulate data, where possible. All data were collected using structured interview tools. Ethical approval for the study was obtained at the institutional review boards at JSI in Boston, USA, and the Public Health Faculty of Hasanuddin University in Makassar, Indonesia. Interviews were audio-recorded and converted into detailed notes, which were read and re-read to find common patterns and themes across respondent types.

Forty-three stakeholders participated in 23 KIs. Participants included a range of respondent categories, including: government officials (health, local neighborhood, administration, education, environment, information and communications technology [ICT], public works, social protection, traffic, transportation, and waste management), public and private health care providers, and stakeholders representing civil society and academia. A list of interviewees is provided in Annex A.

To understand the needs of underserved citizens living in Makassar, three neighborhoods were carefully selected for resident FGDs and direct observation sessions—one from a middle-class area and two from neighborhoods with economically disadvantaged groups. The areas chosen provided a diversity of perspectives across income levels, housing types and property rights, residential longevity, and migrant and non-migrant populations. A typology of different resident FGDs is provided in Annex A.

To supplement the data collected from health service providers and citizens about the health services, direct observation was completed at six health service delivery points: two hospitals representing secondary and tertiary health care facilities, two private clinics, one primary health care center, and one community-based health post at the neighborhood level.

Finally, a desk review was conducted to supplement the primary data collection. See the Reference section for more information.

3. RESULTS

I. Health Sector and Services in Makassar

Structure of health services in Makassar

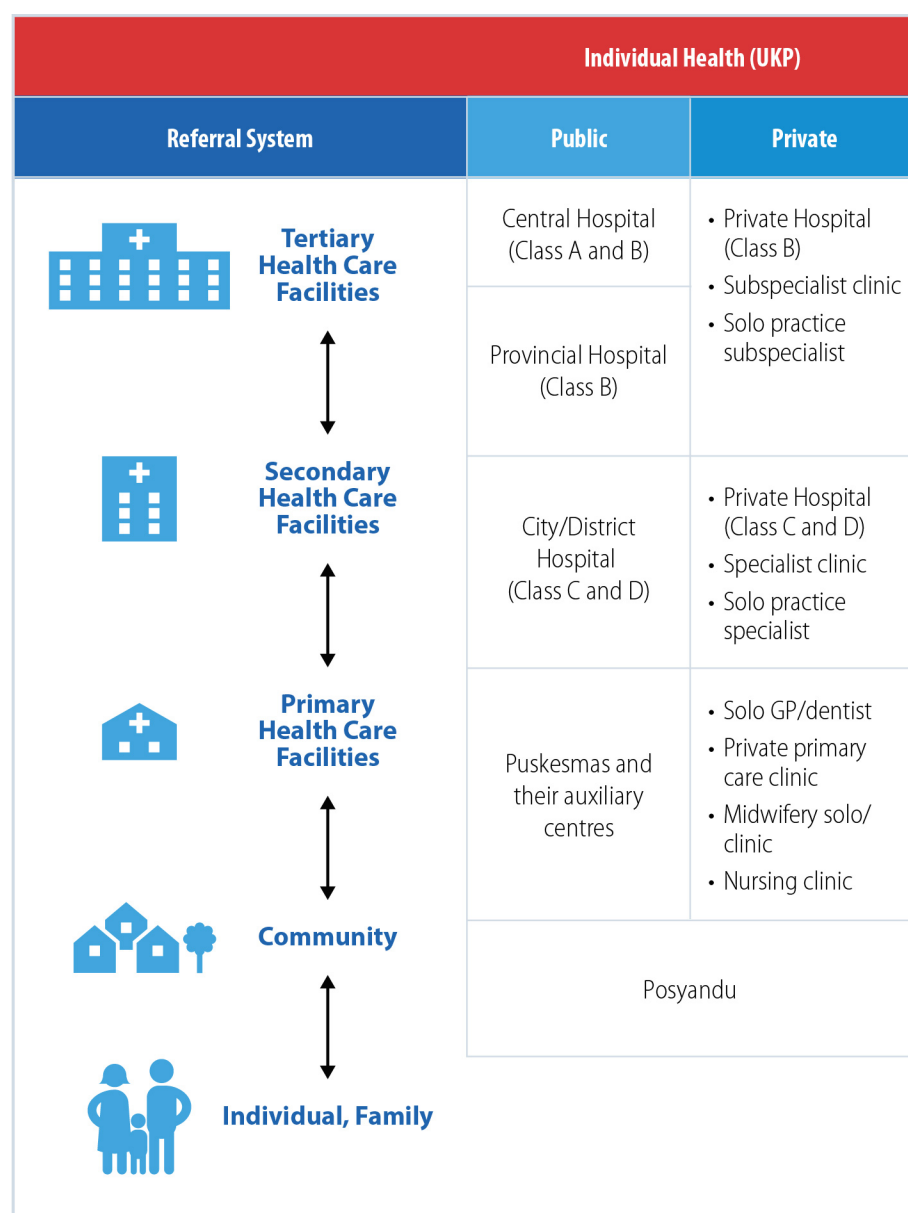
The Indonesian public health system is decentralized with devolving responsibilities at the central, provincial, and district/municipal levels. The central ministry sets standards, ensures financial and human resources, crafts regulations, and manages some tertiary and specialist hospitals. Provincial governments manage the provincial hospitals, monitor district health services, and coordinate cross-district health issues within the province. District/city governments are responsible for district/city hospitals and the district public health network of primary health care centers (*puskesmas*) and associated sub-district facilities (Mahendradatha et al. 2017). City and district heads have primary responsibility for health care, with technical and financial support from the national or provincial level, as needed (Mboi et al. 2018).

Makassar had one centrally-funded hospital as of mid-2018, Wahidin Sudirohusodo Hospital, which was the largest hospital in South Sulawesi island with an 841-bed capacity (Teerawattanasook et al. 2017). It was the only “Class A” hospital in Makassar, which is a government designation for hospitals that provide services in all specialties and super-specialties. It is a referral hospital for the entire eastern region of the country.

In addition, Makassar had one Class B-hospital run by the city government with 212 beds that provides intensive care, maternal and neonatal care, as well as 24 private general and specialty hospitals that provide maternal and child health, dental and oral care, and mental health care. In addition, Makassar had 224 private clinics (both for-profit and not-for-profit), 46 public primary health care or community health centers called *puskesmas* (including two on fishermen islands in the Spermonde archipelago), and 1,010 community-based health posts called *posyandu* at the neighborhood/sub-village level (“City Hospital Makassar” 2018).

Figure 2 summarizes the current structure of the Indonesian health system for curative health care provided to individuals (*Upaya Kesehatan Perorangan*, or UKP). Community or public health efforts (*Upaya Kesehatan Masyarakat*, or UKM), such as health promotion and prevention activities, are run from the Ministry of Health down through provincial, district, and city health departments and completed in concert with *puskesmas* and *posyandus* (Claramita et al. 2017).

Figure 2: Structure of the Indonesian Health System



Source: Claramita et al. 2017

Service delivery and health worker gaps are filled by the private sector in Makassar. Services are provided in hospitals and by individual doctors, nurses and midwives who work across both public and private clinics to supplement their income (Mahendradatha et al. 2017). Private health services are mostly paid for using out-of-pocket payments, though some private providers were accepting national insurance and may also accept private insurance. Private sector providers are regulated in Indonesia by both central and local authorities and must be accredited. There is wide acceptance for private health care across all socio-economic groups, and demand

appeared to be growing (Mahendradatha et al. 2017). For instance, according to the latest available Demographic and Health Survey in 2012, over half of urban Indonesian women used private facilities for births and family planning, both showing steady increases since 2002 (BPS, BKKBN, Kemenkes, and ICF International 2012).

Puskesmas are community health centers that deliver services based on the Alma Ata principle of primary health care. They are responsible not just for individual health, but also community health activities for the population within their working area, such as health promotion at schools, nutritional status screening, immunization, and environmental health. Puskesmas staff include general practitioners, dentists, nurses, midwives, pharmacists, public health professionals, nutritionists, physiotherapists, and laboratory analysts. Private facilities are mandated to communicate with puskesmas for surveillance of communicable and noncommunicable disease and government programs, such as immunization and family planning. However, in several recent cases these data had not been sent, resulting in sanctions from the health department (Claramita et al. 2017; Putri et al. 2018).

The term *posyandu* refers to '*Post Pelayanan Terpadu*,' or post for integrated services. This post is arranged by community health workers or health cadres at the neighborhood or sub-village level. The *posyandu* cadre monitors maternal and child health, nutrition, immunization, diarrheal diseases, and family planning. A day is designated each month for *posyandu* services (e.g., recording growth monitoring, counseling and education, and providing food items such as soy porridge and vegetable rice porridge for toddlers). Staff from the nearest puskesmas come to the *posyandu* to conduct medical examinations, immunization, family planning, and other basic health services. Some *posyandu* also provide special services for senior citizens (Dewi 2011).

The City Government of Makassar has established a Home Care program called *dottorota* that is free of cost and available 24 hours a day 7 days a week for enhanced primary care services for all city residents. Residents call an emergency number and a doctor (if they are available) or a nurse will arrive in a mobile van to administer care on-site and transport patients to the nearest facility or for follow-up services (e.g., after surgery). In 2016, the City Government of Makassar equipped home care ambulances with telemedicine capabilities and expanded consultation services through a 24-hour call center. The government has begun digitally integrating information on the management quality of health service providers.



Home Care van providing free emergency and telemedicine services 24/7, free of cost.
Photo credit: Smart City Office, Makassar

The city had 48 Home Care vans in 2018. An interview respondent at the puskesmas stated that there were no additional staff to run Home Care, and the van was called about 20 times each month.

Telemedicine services were particularly useful for island dwellers in the archipelago as it provided greater access to specialists without requiring travel to the mainland, unless absolutely necessary.

Primary health care strengthening was a key goal in passing a series of health system reforms to achieve efficient and effective health care for all. One critical reform is the National Social Health Insurance Scheme, described in the next section.



Information on Home Care services available at a puskesmas.

Photo credit: Damodar Bachani, 2018

Universal health coverage through the National Social Health Insurance Scheme and District Health Insurance Scheme

In 2014, the Indonesian Government launched its National Social Health Insurance Scheme (*Jaminan Kesehatan Nasional* or JKN), which aims to provide universal coverage. The government covers insurance premiums for those who fall within the bottom 40 percent of Indonesia's income distribution; formal workers' premiums are covered jointly by the employee and their employer. The JKN emphasizes primary care and improved procurement, distribution, and utilization of key medicines. Its main objectives include increasing equity in access to health care, improving health outcomes, and keeping health care costs down (Mboi et al. 2018).

A single purchaser—the Social Security Administrative Body for Health (*Badan Penyelenggara Jaminan Sosial-Kesehatan* or BPJS)—acts as a third-party payer, contracting both public and private providers at primary, secondary, and tertiary care levels. BPJS uses a capitation-based system to pay contracted primary care providers (puskesmas and private clinics) for various services. The payment of IDR 10,000 (less than USD\$1) per person is transferred monthly to the puskesmas and clinics for two kinds of expenses: 60 percent for health services and the rest for operational expenses. The health services covered include administration, promotive and preventive services, diagnostics, treatment and consultation, non-specialist services, medicine and medical equipment, and laboratory diagnostics (BPJS Health 2014).

A strong referral system was developed by JKN in order to keep the system affordable. BPJS cardholders must register with a primary care facility that is part of JKN's empaneled list. Empaneled facilities act as gatekeepers, because patients cannot seek services at secondary and tertiary facilities without a referral from the lowest tier (Putri et al. 2018).

By law, all Indonesians must enroll in the national health insurance by January 2019. As of 2018, approximately 74 percent of Indonesia's population was covered by JKN—those who still did not have coverage were often informal workers who earned too much to be eligible for subsidized coverage (Health Policy Plus 2018). As of 2018, there were three tiers of premiums based on income level: those below the national poverty line receiving subsidies or exemptions, a second tier equivalent to IDR 51,000 (USD\$3.50) per month, and a final tier of IDR 80,000 (USD\$5.50) per month. These costs may have been subsidized or fully covered by one's employer.

Since 2003 and prior to JKN Makassar has employed a universal health care scheme (*Jaminan Kesehatan Daerah* or District Health Insurance Scheme). This scheme does not require a database of beneficiaries because it provides coverage for all citizens who reside in the jurisdiction, and users are only required to show proof of residence via the National ID, which lists place of residence. The costs for this health care are shared by the municipal and provincial governments.

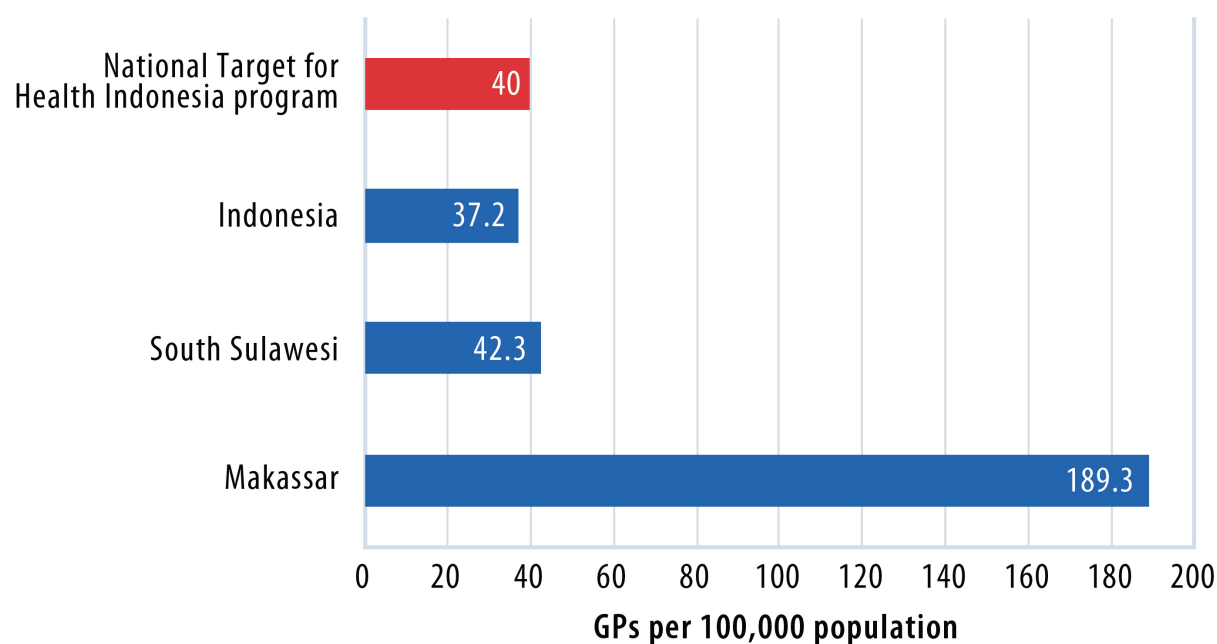
Makassar residents have access to free basic health care services in puskesmas, such as medical treatment, routine check-ups (pre-natal, immunization, and general laboratory services), patient registration, emergency room services, maternal and childcare, dental and mouth check-ups, and full exemptions of third class referral health care services at the Municipal Health Hospital in the city. However, it excludes several services, such as family planning, diabetes screening, and blood group checks (Dwicaksono, Nurman, and Prasetya 2012; Triwibowo 2012). The introduction of JKN has increased the number and variety of facilities where residents can seek care.

At the time of writing, all government-run insurance schemes, including the JKD, have been integrated to BPJS/JKN. What the integration means in practice is that the budget to cover the poor in Makassar will continue to be covered by the budget allocated by the local government for the JKD, whereas the rest of the population will be covered through central government funding. There are currently 470 districts/cities in Indonesia that have integrated their Jamkesda (JKD) to BPJS (Nasruddin 2017).

Health Workforce

According to the latest data available, the density of the health workforce in Indonesia was lower than the global average of 160 general practitioner medical doctors per 100,000 (Claramita et al. 2017). However, when broken down to the city level, data in 2013 showed that Makassar City had a much higher ratio, at 189.3 per 100,000, as shown in Figure 3, which includes doctors in both the public and private sector. If only doctors in the public sector are considered, Makassar has a significant deficit, at only 9 physicians per 100,000 population.

Figure 3. Comparison of Density of General Practitioner Medical Doctors

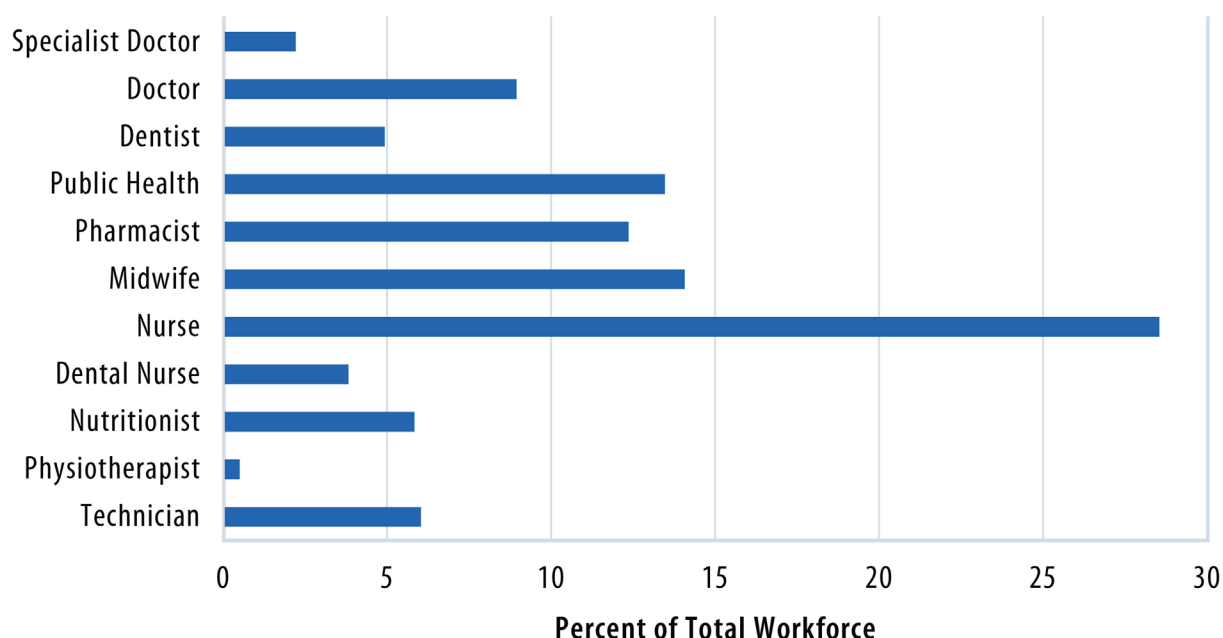


Source: Secretariat of Indonesian Medical Council 2013

The distribution of these doctors may be uneven across levels of the health system. For example, at one of the largest puskesmas in Makassar, only three medical doctors were available to cover a population of 38,842. They were assisted by seven medical interns who had yet to complete their studies.

Makassar's total public health workforce population is 1,723. A breakdown by cadre is provided in Figure 4. The proportion of doctors and nurses as a part of the total workforce was slightly lower than the national average, while the proportion of pharmacists and public health professionals was higher than the average.

Figure 4. Breakdown of Health Workforce in Makassar



Source: Health Department of Makassar 2017

Services for vulnerable populations

The JKN provides a strong contribution towards making health care accessible and affordable for vulnerable groups. As of July 2017, 61 percent of enrollees nationwide were government-subsidized members (Putri et al. 2018).

Interview data highlight the advantages of the BPJS. All BPJS cardholders were required to register with a primary health care center, either government-run (the community health center or puskesmas) or private clinics empaneled with BPJS. At one private clinic, BPJS cardholders received primary care services at no cost, while non-cardholders are charged approximately IDR 40,000 (USD\$2–3) per outpatient visit. The District Health Insurance scheme did not cover this private clinic. Similarly, at a large private hospital with more than 90 doctors, also empaneled with BPJS, outpatient fees were approximately IDR 150,000 (USD\$10–11), whereas BPJS cardholders received primary care for free. Equity in access to services remained a challenge, which is discussed in section 4.2: Knowledge Gaps.

Research suggests that two groups have not received the full benefits afforded by the JKN. Lack of accurate data on poor and vulnerable households has led to inaccurate targeting of beneficiaries, thus delaying coverage of the economically vulnerable (Putri et al. 2018). Second, non-poor informal workers—including those just above the poverty cutoff—were required to individually register for JKN and make monthly premium payments. Informal workers made up approximately 60 percent of Indonesia's workforce, and about 60 percent of those workers lacked health insurance, citing high premiums and the difficulties of enrolling. Their participation is key to the success of JKN

and, by extension, to the success of health care for vulnerable groups (Banerjee et al. 2017).

As a local example of differentiation of fees, an interview respondent at a puskesmas in Makassar provided the costs of receiving care at the puskesmas, depending on the patient's type of ID card (see Box 2).

BOX 2. CASE STUDY: COST OF CARE BASED ON ID DOCUMENTATION

The BHC assessment team spoke with a health care worker familiar with payment schemes in Makassar, who provided the following descriptions of how the documentation a resident has can affect the cost of the care they receive.

If a resident had a National ID card that indicated Makassar residency and had not obtained a BPJS card, then health care was free.

If a resident had a National ID card that indicated non-Makassar residency but had a BPJS card and a referral letter from BPJS that showed that resident was now living in Makassar, then health care was free. The health care worker noted that less than 5 percent of patients each month presented with this scenario.

If a resident had a National ID card that indicated non-Makassar residency and had a BPJS card that was issued in the place identified in the National ID card, then health care was free the first visit. An approximately USD\$1.00 consultation fee was then charged at each subsequent visit.

In contrast, if a resident had a National ID card that indicated non-Makassar residency and did not have a BPJS card, a consultation fee of approximately USD\$1.00 was charged at the first visit, as well as each subsequent visit.

Finally, if a resident had no National ID card, then the puskesmas would provide treatment until the patient recovered, and then was required to report the patient to the Social Ministry.

KIs and FGDs confirmed the two groups among the urban poor who experienced difficulties accessing services were: (1) people who lived and worked in Makassar but had a National ID card that identified them as non-Makassar residents; they lacked the necessary documentation that showed a change in domicile that would allow them to access services in Makassar; and (2) those who did not have a National ID card at all. Accurate figures on these groups were unavailable, but both groups were vulnerable to health shocks due to out-of-pocket expenses. In addition, without the necessary documentation, they were not eligible for other social protection schemes, such as subsidized rice or cash transfers that would make their life easier.

There was lack of agreement among interview respondents on the ease of getting the necessary documentation. Residents claimed that to get a change in domicile from their native place was cost prohibitive because, as daily wage workers, they could not afford days off or the costs of travel back to their native place. The neighborhood administrators said this was a poor excuse and not much could be done for citizens who were not motivated to follow administrative rules.

Budgetary constraints at the city level negatively affected insurance enrollments for vulnerable populations. A representative of a nongovernmental organization (NGO) in a low-income neighborhood stated that some residents have been asked to enroll as a paying member with the lowest premium, even though they are eligible to be fully covered by the government. Asked about this delay, a government respondent said this was due to the limited budget of the city of Makassar. During the next budget cycle, these remaining people will be covered, provided there are enough resources available.



Free ambulance service provided by a faith-based charitable organization.
Photo credit: Cita Sehat, 2018



Clinic operated by a faith-based organization.
Photo credit: Monica Biradavolu, 2018

Faith-based charitable organizations filled some of the gaps by providing primary care services free of cost and without checking for IDs. For example, one organization had one permanent clinic and eight “temporary clinics.” The permanent clinic had a general practitioner, dentist, nutritionist, pharmacist, and midwife who were paid employees. A gynecologist, orthopedist, and internist came on some days on a volunteer basis. The temporary clinics were open on the same day, every week, at the same location. A doctor, nurse, lab analyst, and pharmacist provided services. An ambulance could be called 24 hours a day, seven days a week (as shown in the photograph below), and a “hospital ship” traveled once every two months to islands around Makassar. However, the number of these organizations was not large enough to cover all Makassar residents, and the charitable organization did not have a clinic in the low-income neighborhood visited by the assessment team.

Use of health services and quality of care

FGD and KII respondents from civil society and academia agreed that the quality of services offered at the puskesmas and posyandu were good; compared to even a few years ago, more residents knew to get regular check-ups instead of only going to the health care provider when there was an illness. Medicines in the public health system were rarely stocked out. These findings corroborate a study among the urban poor in Makassar, which also found a general satisfaction with health services offered at the primary health care centers in the city (Suryahadi et al. 2011).

Two technological innovations have improved the quality of care. An integrated referral system, called *sisrute*, allowed easy access to information on the availability of doctors, beds, etc., at various health facilities in the city. *Sisrute* also included the Home Care program. Second, the government hospital operated an “e-hospital” where key data were available online and through a mobile application (e.g., wait times, doctor availability, consultation fees, available beds, etc.).

However, equity issues remained. Direct observation at the private hospital showed that BPJS cardholders were required to register on a separate floor and had longer wait times than patients who had private insurance. Puskesmas were also overcrowded. A government official said, *“To go to the Puskesmas means that you have to be patient. You can go to a private clinic to get basic care quickly, but you cannot get all specialties at private clinics.”* Moreover, patients could only go to their designated puskesmas. If a patient was registered at a puskesmas that had a larger catchment area and was more crowded than others, they could go to another puskesmas, but the intake staff might question the patient on why they did not go to the one where they were registered.

Overcrowding affected all Makassar residents. Another hospital respondent said that the number of specialists available in Makassar was limited. For example, a private hospital that saw up to 600 outpatients every day had only two urologists, both of whom worked at two additional hospitals.

Community outreach

Primary health care facilities can use capitation fees from BPJS for two main expenses: health worker expenses and operational costs. The latter includes drugs, medical equipment, and UKM, which are restricted to groups of patients enrolled in chronic disease management; and UKP. Thus, the operational incentives can cover a comprehensive set of promotive, preventive, curative, and rehabilitative care; home visits; mobile services; administrative expenses; and information systems.

A review of the implementation of JKN in Indonesia, which did not include Makassar, found that puskesmas were not obligated to make a strong commitment to funds that focus on preventive care at the community level, and the incentives to do so were

“Hospital workers deliver less friendly service to BPJS cardholders.” - Focus group discussion with lower-income citizens, April 2018.

“It happens every day that we have to turn patients away because we do not have empty beds.” - Health care provider, private hospital, April 2018.

weak (Putri et al. 2018). This finding is contrary to the perspective of health professionals interviewed in Makassar, from both the public and private sector, who said that the national insurance scheme had strengthened the puskesmas and posyandu toward preventive care.

During interviews, health care providers in Makassar at both the primary and secondary care levels stated that they conducted community outreach activities (e.g., running screening camps for NCDs in different neighborhoods free of cost and providing brochures on prevention or organizing group exercise sessions once a week). Private clinics (both for-profit and charitable) also offered other services for free (e.g., free exercise classes, with different classes for different disease profiles—more cardio for some patients, more stretching for others). The classes were available for Makassarese in all income groups. Box 3 presents the case of a community outreach effort for NCD screening and prevention, which brought together a local charitable organization, a posyandu, and a puskesmas.

BOX 3. CASE STUDY: COLLABORATION BETWEEN POSYANDU, A CHARITABLE ORGANIZATION, AND PUSKESMAS FOR COMMUNITY OUTREACH PROVIDES NEW SERVICES FOR MORE TARGET GROUPS

A faith-based charitable organization conducted a survey in a neighborhood and discovered that residents of both sexes had high rates of diabetes and hypertension. While women of reproductive age and children received services through the posyandu, men and the elderly were left out, creating a service gap. The charitable organization decided to provide an instructor and use the space of the posyandu to hold exercise classes once a week.

The program first targeted women of all ages, but men were enthusiastic to join as well. The sessions were only held once a week because the instructors were volunteers and could only spare time on the weekend. *“If it was available, we would join three times a week,”* said one resident. The posyandu was located on a street where middle- and upper-middle income residents lived on one side and lower-income residents lived on the other side. The exercise classes brought everyone together.

There was also collaboration with the nearest puskesmas. At the posyandu, the nurse with the charitable organization conducted regular check-ups for hypertension, cholesterol, and diabetes. The nurse also picked up medicines from the puskesmas to distribute to patients, which saved them a trip.

NCD risk factors and services

A meta-analysis of NCD risk factors and interventions in Indonesia found that between 1990 and 2016, total disability-adjusted life years (DALYs) due to communicable, maternal, neonatal, and nutritional causes decreased by 58.6 percent—from 43.8 million to 18.1 million. At the same time, DALYs from NCDs rose. The three leading causes of DALYs in 2016 were ischemic heart disease, cerebrovascular disease, and diabetes. The most commonly studied risk factor was tobacco smoking. Indonesia has the world's fifth highest number of smokers. Indonesia is also the only country in the Southeast Asian region that did not ratify the WHO Framework Convention on Tobacco Control (Schröders et al. 2017).

Both quantitative and qualitative data from Makassar show tobacco smoking to be a leading risk factor for NCDs. According to the 2013 *Riset Kesehatan Dasar* (RISKESDAS), or National Health Research study, 20.8 percent of the population in Makassar were smokers, and most (97 percent) were men. The highest percentage (71 percent) was among those 15–45 years old. All KII respondents from across the range of respondent types—government officials, health care providers, and citizens—agreed that smoking rates were very high, and men from all segments of society smoked. Other risk factors identified in interviews were diet, especially because popular foods in Makassar tend to be high in fat and cholesterol, and a lack of physical activity. This is supported by 2013 RISKESDAS data, in which 65.8 percent of respondents had excess sugar consumption, 38.9 percent had excess fat consumption, and 52.2 had insufficient physical activity. In interviews, respondents from across facility types also identified hypertension, diabetes, and high cholesterol as common medical complaints across gender and socioeconomic classes. A respondent from a secondary care facility noted that patients presented themselves with acute conditions due to complications from diabetes and hypertension.

Asthma and acute respiratory infections have been documented in the routine health data to be an issue in Makassar, though the veracity and quality of routine data were debated heavily in interviews. Further investigation is needed to understand the true burden of respiratory disease in Makassar. From the literature, a 2016 study found that prevalence of asthma and abnormal lung function in Makassar were 13 percent and 24 percent, respectively (Haryanto et al. 2016). Average air pollution was about 6–8 times higher than the WHO recommended levels and enough to cause respiratory issues, however no association was found to asthma prevalence. Instead, proximity to primary roads and smoking status were associated with asthma.

At a systemic level, according to Schröders et al. (2017), like many other middle income countries, Indonesia's health system approach to NCDs is still very much on an individual basis. In terms of services for NCDs, interview data from across health

“The need for dialysis is growing every day. It will come like a tsunami” - Healthcare provider, April 2018.

care providers—public and private—identified the lack of dialysis centers for diabetes patients as a critical barrier. Only four hospitals offered dialysis, and these were always at full capacity, with three shifts per day and 20–30 patients per shift. These hospitals not only served Makassar residents, but patients from all over the South Sulawesi province. One interviewer mentioned—although this must be confirmed—that dialysis was free of cost for BPJS cardholders.

Communicable disease risk factors and services

Respondents agreed on the most common communicable diseases in Makassar, and that the urban poor residents of the city were at greater risk. These included tuberculosis, infections of the upper respiratory tract, diarrhea and, particularly during the rainy season, dengue and typhoid. New survey data are currently being analyzed for Makassar, having just been collected in 2018 to update the 2013 RISKEDAS data. These data will provide a better picture of the communicable disease burden in the city.

A public health expert interviewed mentioned that hookworm and stunting remained problems among children in informal settlements. Asked why stunting was still a problem and how this reflected on the posyandu system, the public health expert responded, *“The biggest risk factors for poor nutrition are outside of health sectors, like water and sanitation.”*

II. Underserved Populations in Makassar

A more complex picture of the term *underserved* was developed across assessment interviews. Interviewees mentioned the following groups as being either under-represented or having relatively low access to health-related services and healthy lifestyles:

- Economic migrants from elsewhere in Indonesia
- Day laborers
- Fishermen/island dwellers
- Women living in informal settlements
- Youth not attending schools
- Elderly
- Unemployed living in informal settlements
- Political migrants from outside of Indonesia

At least 45.4 percent of South Sulawesi's economy comes from Makassar, resulting in economic migration, both seasonal and non-seasonal (Santoso et al. 2017). Many migrants form the urban poor of Makassar, working in informal sectors, such as day laborers in construction, street vendors, or pedi-cab drivers. Some work in the formal sector as factory workers, either as full-time workers or contract workers. Education levels were low, and many adolescents were out of school (Suryahadi et al. 2011).

In Makassar, the urban poor live in slums that have varying levels of housing quality, land tenure rights, and infrastructure facilities. However, based on primary and

secondary sources, data were inconsistent on the number of slums. A government official stated that there are 142 slums, a public health expert said that there are 124, and a Smart City document lists “36 high slum spot areas” and “46 middle slum spot areas.” Further inquiry is needed to resolve these differences.

Barriers to healthy lifestyles

The WHO definition of healthy lifestyles (see Box 4) guides the BHC project implementation (WHO Regional Office for Europe 1999). Citizen focus groups and health sector interviewees were asked about barriers to healthy lifestyles and social determinants of health in each community and across Makassar, as well as about their perception of access to city services and its relationship to health. Barriers varied by neighborhood and income level, but some common themes emerged.

Water supply

Seventy-two percent of Makassar's residents had access to piped water (Technical Team Makassar Smart City 2017). A report published in 2012 put this figure at 62 percent (CSIRO 2012), suggesting an improvement in the city's services during a six-year period. However, direct observations and focus groups with citizens revealed that residents also used groundwater. Lower income residents had a limited water supply from the municipality. One public health expert stated, *“It is very sad that in Makassar people still do not have access to basic human necessities...people are still struggling for clean water. It is not just the quality of water, it is even the quantity of water. Many have borewells because the municipal supply is not enough.”* A resident FGD participant stated, *“The water supply is from midnight to 6 a.m. We need to stay up at night to wash clothes, bathe, etc. What other people do during the day, we do at night.”*

Box 4. What is a Healthy Lifestyle?

“A healthy lifestyle is a way of living that lowers the risk of being seriously ill or dying early.

Not all diseases are preventable, but a large proportion of deaths, particularly those from coronary heart disease and lung cancer, can be avoided... Health is not just about avoiding disease. It is also about physical, mental and social well-being.” – WHO Regional Office for Europe 1999



Household garbage dumped into stormwater drains.
Photo credit: Monica Biradavolu, 2018

Open clogged drains

The water pollution in Makassar is primarily from domestic wastewater. Blackwater (toilet water) is discharged to septic tanks and pits on individual properties, while greywater (wastewater from bathroom, kitchen, and laundry) is discharged to a network of open stormwater drains. A common practice is to dispose of garbage in stormwater drains. Overflow and blockage of drains is common and compounds the risk of water contamination and overall public health risks. Direct observation of open drains in neighborhoods in Makassar confirmed this finding (CSIRO 2012).



Flooding after one day of heavy rains in July 2018.
Photo credit: Muh Afdhal, 2018

Flooding

A report by UN-Habitat (Taylor, Saracho, and Rifai 2014) documented that from 1999–2013, 26 cases of flooding were recorded in Makassar; 324 houses were damaged and 6,476 people were affected. According to information received from Smart City Makassar, the city had 21 flood-prone areas and 7 critical hotspots for flooding (Technical Team Makassar Smart City 2017). The issue of flooding was a key topic of discussion in the focus group. They said their biggest complaint regarding city services was with flooding—where the water entered the home and could be knee-deep. Their only solution was to wait until the water receded on its own. During high rainfall, the flooding was exacerbated when the clogged stormwater drains overflowed.

Lack of maintenance of septic tanks

The condition of the septic systems is unknown in many areas and groundwater leakage is suspected (CSIRO 2012). While more than 70 percent of households nationwide had access to basic sanitation, the percentage with proper disposal and treatment of wastewater was less than 10 percent due to a lack of proper septic tanks and infrequent de-sludging. In all cities, including Makassar, residents tend to rely on expensive private operators that pump septic tanks only by request. Weak law enforcement, unreliable access to affordable sanitation services, and lack of public awareness about proper tank maintenance meant that households have not invested in maintaining existing septic systems. Most do not request routine emptying because they are unaware that their systems need to be de-slugged regularly (USAID Water 2016).

Low levels of awareness on sanitation issues in general

Government respondents from across various departments said that residents in low-income neighborhoods were not generally aware of sanitation issues. According to one official, *"They do the washing, bathing, cleaning, even swimming in the same place where they defecate. They live in a permanent toilet. They are used to it. Those of us who are aware of their health might feel like vomiting when they see the situation."* One neighborhood official said that he regularly sent sanitation workers to unclog drains, but the residents refused to stop throwing household garbage into the drains, especially plastic waste products.

Ongoing projects

Three projects were ongoing with the goal to improve the built environment of underprivileged groups in Makassar. Kotaku National Slum Upgrading Project is a national program started in 2015 that focuses on improving access to basic services in existing slums and preventing the formation of new slums (Kotaku Project Implementation Unit n.d.). The program in Makassar began implementation in 2017, and does not evict residents nor raze neighborhoods. They have seven focus areas that were developed after a participatory needs assessment survey: improving roads, drains, housing structures, fire awareness, water supply, sanitation, and trash management. The photograph at right shows a project undertaken by this program: a street



Street elevation work by the Kotaku program.
Photo credit: Monica Biradavolu, 2018

elevation project to prevent water clogging. Residents noted during a BHC observation session in the neighborhood that budgetary constraints prevented work on all streets and that during very heavy rains, this limited elevation does not prevent water from entering homes.

Monash University, in collaboration with Hasanuddin University, is implementing a program called the Revitalizing Informal Settlements and their Environments (RISE) project, which is funded by the Wellcome Trust and the Asian Development Bank. The project will cover 12 informal settlements across Makassar (six intervention and six control). At the end of the five-year project, the control areas will also receive the intervention, which will provide homes with sanitation systems specifically designed by engineers who studied the different housing structures. The hypothesis is that by treating the water and sanitation systems, there will be less pathogenic contamination and, therefore, better health. Many indicators will be tracked during the five years, including regular collection of samples to test the water. RISE worked closely with the Ministry of Health to determine the 12 sites. When asked if they work with the Kotaku program, the respondent said, *"We have heard about them. There are many programs doing WASH-related [water, sanitation, and hygiene] activities, including a USAID program. But we have selected sites where no other agency is working so as not to duplicate."*

USAID's Indonesia Urban Water, Sanitation, and Hygiene (IUWASH) project has prioritized improvements to urban water and sanitation service delivery since 2011. In Makassar, the IUWASH runs a regular de-sludging service program. It involves the periodic removal, via vacuum pumps, of sludge that accumulates in septic tanks over time, which is then transported to treatment plants for permanent disposal. This ensures that household septic tanks function properly, thereby reducing the likelihood that groundwater will be contaminated or that waterborne diseases, like diarrhea, will threaten public health.

III. Coordination, Management, and Funding

Makassar is currently one of 25 Smart Cities in Indonesia, though this number may expand to 100 by 2019. Smart Cities is a joint program of the Ministry of Communications and Informatics, Ministry of Home Affairs, Ministry of Public Works and Housing, National Planning Agency (Badan Perencanaan Nasional or BAPPENAS), and the President's office. It aims to guide the district or city in preparing the Master Plan of Smart Cities to optimize technology, increase public service, and accelerate the potential in each region (Ministry of Communications and Informatics 2017).

The city government of Makassar supports the city's Smart City development plans. Smart City strategic priorities include enhancing access to and quality of health care. According to the Smart City office, the city wants to address 12 issues or challenges, as shown in Figure 5.

ISSUES & CHALLENGES

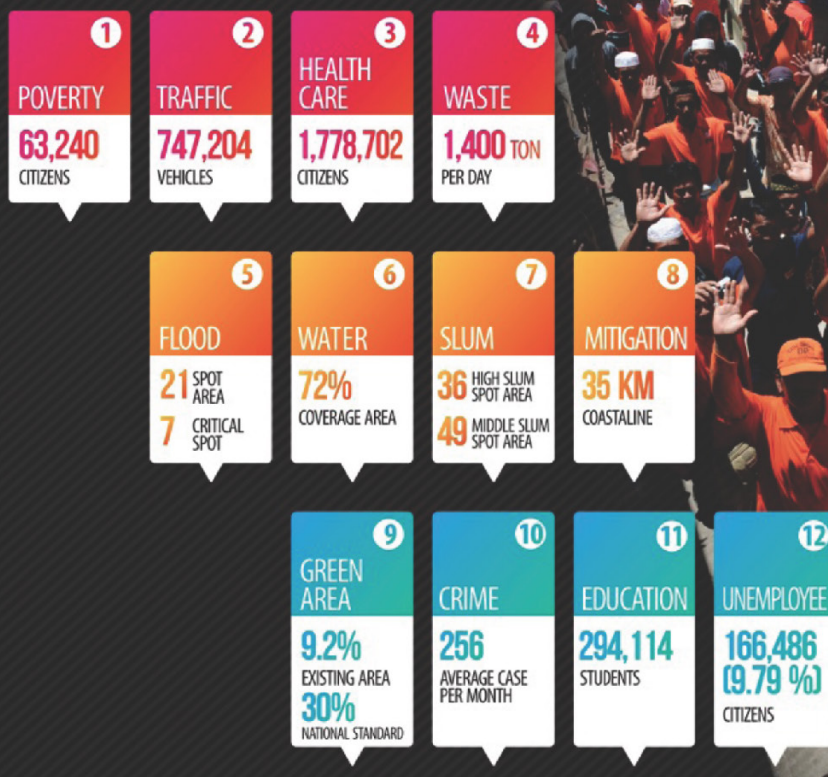


Figure 5. Smart City Makassar Issues and Challenges

Source: Hidayat 2018

To address these issues, Smart City envisions a future with eight objectives:

- No unemployment
- Universal health insurance
- Twenty-four hour free emergency medical care
- Free education allowing everyone to attend school
- Free skills training and microcredit programs³
- Reducing trash and increasing the food safety net through the Trash for Rice⁴ initiative
- Affordable city housing
- Living green with adequate foliage cover

Makassar's Smart City program has six components: smart governance, smart branding, smart economics, smart living, smart society, and smart environment (see Annex B for

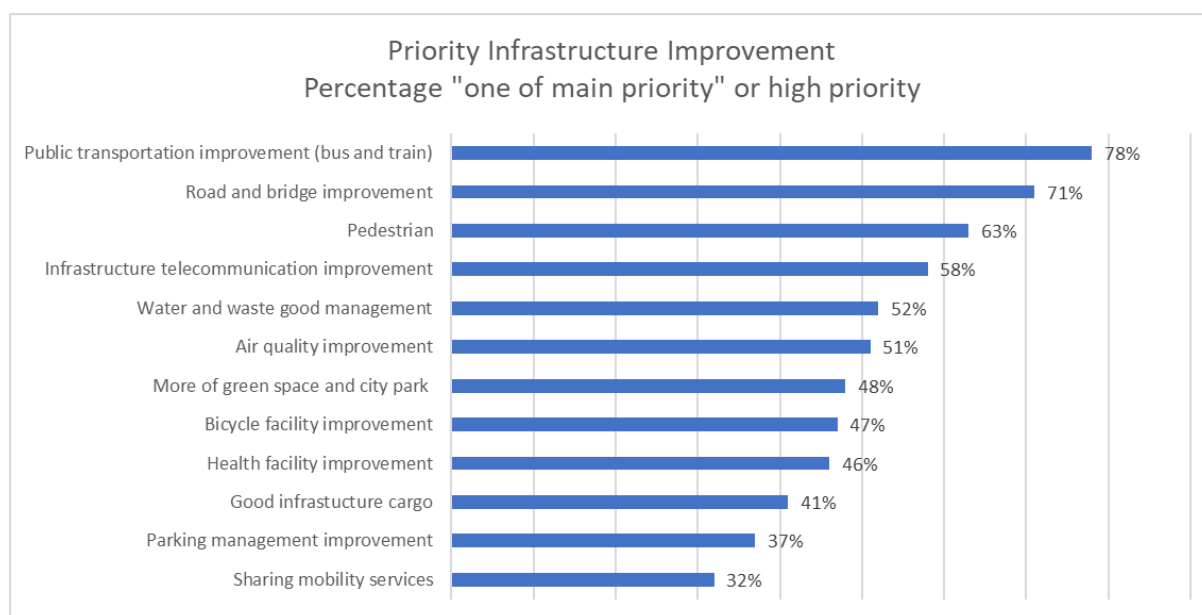
³ The Government of Makassar, through the Department of Labor, provides free skills training and job fairs for the unemployed. There is also a program that provides microcredit loans without collateral to help individuals start businesses.

⁴ The "Trash for Rice" program enables city residents to exchange recyclable trash such as plastic, bottles, paper, iron, copper, etc. for rice, drinking water, or cash (e.g., a kilogram of plastic bottles fetches IDR 7,000, a kilogram of plastic bags fetches IDR 500, and a kilogram of carton boxes can fetch IDR 1,000 - 1,400.)

more details). Programs are allocated budgets and are implemented by the relevant sectors or multisectorally. For example, the health department manages the Home Care program by using 0.69 percent of the total health department budget. Other health-related programs, such as “healthy alley” and “birth control alley” are implemented multisectorally, and are led by the Regional Planning Agency (*Bappeda*) for budget and coordination. Similarly, the “garden alley” program is handled multisectorally, with the environment department taking the lead, with funding from private sectors.

Infrastructure improvement of public transportation, roads, bridges, and pedestrian walkways are the main priority of Smart City Makassar, as shown in Figure 6. These are expected to have positive effects on the health of Makassar's residents. On the other hand, it appeared that as of 2017, direct improvements to health infrastructure were of medium to low priority (see Figure 6).

Figure 6. Makassar Smart City Infrastructure Priorities



Source: Technical Team Makassar Smart City 2017

Management

The Smart City office in Makassar is under the Communications and Informatics Department. As of 2018, there was no national standardized definition for what makes an Indonesian city a “Smart City.” Therefore, using city budgets, the city government of Makassar designed its own initiatives and innovations.

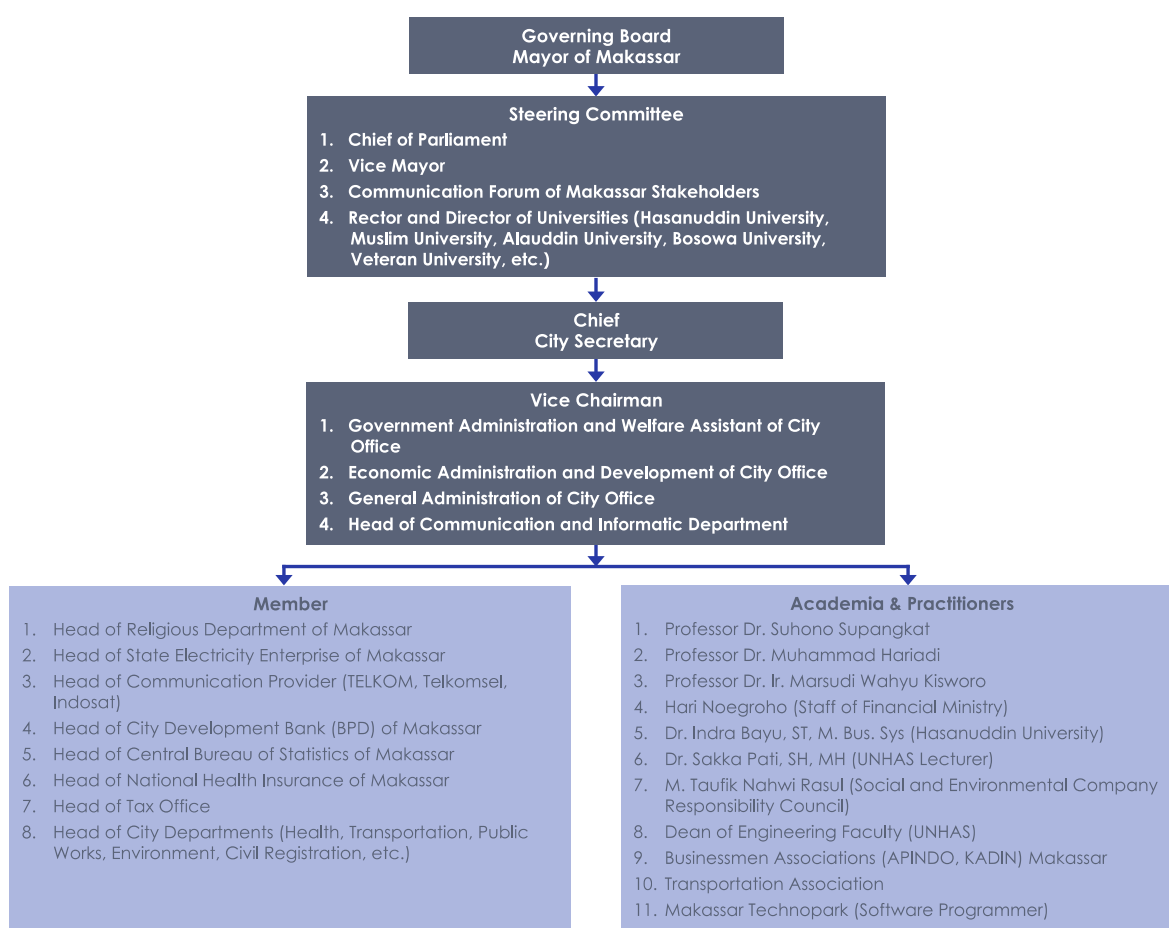
To accelerate the Smart City program, the Makassar City Office issued two decrees, signed by the Mayor in 2017, describing how the Smart City will be managed and implemented. The Smart City is managed by a Smart City Council, with the Mayor serving as the head of the Governing Board of the Smart City Council. The Chief

Building Healthy Cities

Secretary is the Chief of the Smart City Council, and other members include the Chief of Parliament, the Vice Mayor, rectors of universities, and chiefs of various sectors. The Smart City Council is responsible for the following (see Figure 7):

- Develop and finalize the Smart City master plan draft to be ratified and integrated into Makassar's short-term development planning.
- Develop multisectoral roles and coordination among government agencies, academics, local communities, and the private sector to achieve the Smart City development goals.
- Monitor and evaluate Smart City's achievements to improve implementation.
- Provide recommendations to the government and other parties to improve planning and implementation quality of the Smart City master plan.

Figure 7: Smart City Council Organogram



Source: Decree of Makassar Mayor: Pembentukan Dewan Sombere Dan Smart City Makassar Periode 2017

Makassar's Smart City office also has an implementation team. The steering committee of the implementation team includes the Regional Planning Agency (Bappeda); the

Building Healthy Cities

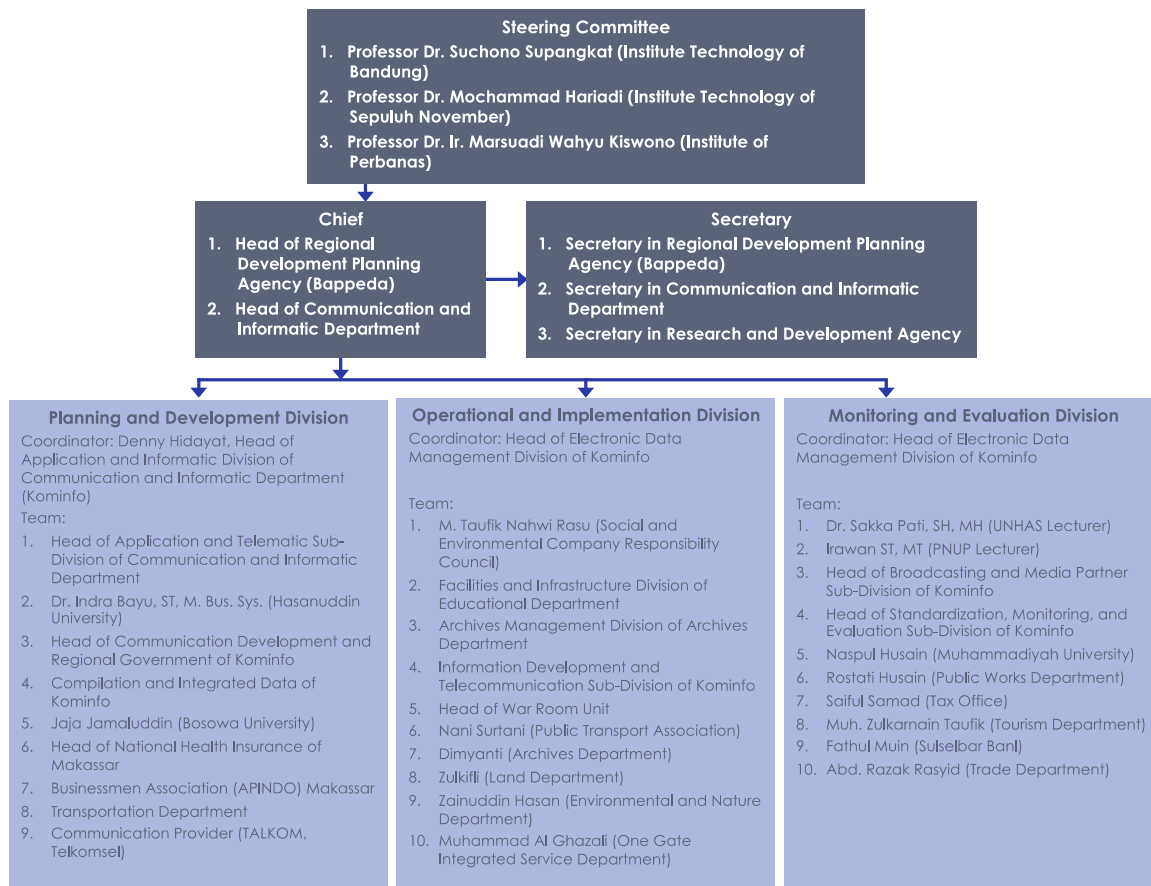
Communications and Informatics Department (Kominfo), which is the lead implementing sector; and representatives of the private sector and local communities.

The implementation team is divided into smaller groups, with each group in charge of one of the six Smart City components. The larger implementation group generally meets twice a year, and the smaller implementation group meets monthly to discuss implementation, monitoring, and evaluation. This implementation team is responsible for the following:

- Develop regulations to achieve Makassar's Smart City goals.
- Provide recommendations to integrate Smart City concepts, information technology, and multisectoral coordination with relevant sectors; and recommendations to implement programs effectively, efficiently, transparently, and with accountability.
- Report and coordinate team performance, monitor results, and provide routine evaluation reports to the Smart City council.

Figure 8 is the organogram for the Smart City implementation team which includes 13 departments, seven universities, and three private sector entities.

Figure 8: Smart City Makassar Organogram



Source: Decree of Makassar Mayor: Pembentukan Dewan Sombere Dan Smart City Makassar Periode 2017

Other programs, Kotaku and Healthy City, are also health-related programs that ideally would be coordinated under the same forum in the city office. However, at the time of interviews they were coordinated by their own related sectors. Kotaku, a national program under the Ministry of Public Work and Housing, is implemented by the public works department of the city; Healthy City, a national program under the Ministry of Health, is implemented by the health department; and Smart City is implemented under the Ministry of Communications and Informatics. These groups did not sit in the same office or forum. Furthermore, because of implementation by related departments under the city office, those programs are still under the mayor's control and integrated into urban planning. Both Kotaku and the Healthy City program also report to provincial and national authorities.

Awareness

All government interview respondents were aware of Smart City initiatives. Citizens were familiar with the Home Care van and the emergency number to call.

Funding

Smart City did not have a national budget line or a national mandate; all innovations were at the city level. Makassar contributed 30 percent to the Smart City budget, and the remainder came from the private sector and local communities' participation. For example, the city office issued a regulation that required every building to install their own closed-circuit television cameras to be linked to the dashboard. Another example is the Garden Alley program implemented by the environmental department. A state enterprise, Pertamina, provided funds for seeds and saplings while local communities planted and cared for the plants.

Coordination

Thirteen government departments, seven universities, and three private sector entities are involved in the Smart City implementation team or Smart City council.

According to KIs, the five government departments that currently share data with the Smart City office were Planning, Revenue, Civil Registration, Health, and Financial & Asset Management. According to Smart City officials, the health sector was the most engaged sector. Smart City officials said that the amount of data sharing is limited because there is no regulation in place that allows system-wide data sharing across government sectors. Moreover, there is limited capacity within government departments to properly analyze data. For example, staff at only 14 out of 46 *puskesmas* have been trained on data health information systems. The Smart City only has access to data from one city hospital and the 46 *puskesmas* that are under its jurisdiction. There is currently no data sharing with private health providers.

An example of good coordination was that the health department provides Smart City with immunization data and the Smart City office can analyze the data to understand

the density of people covered at the sub-district level. Another example was through the city budget and revenue. The tax department runs its own applications to collect taxes from individuals and businesses and another department keeps track of city expenditures. Smart City linked the two to enable the Planning Department to know when city funds are insufficient so they can increase their tax collection. Smart City coordination also helped BPJS issue health insurance cards more efficiently because it can connect BPJS systems with the Civil Registration database. The Smart City office has access to the database maintained by the Civil Registration Department, which is necessary to issue the national insurance cards, particularly to identify the most vulnerable households.

According to the KIs, Smart City coordination was limited. Currently, only the city-run government hospital provided real-time data because it is under the jurisdiction of the City of Makassar. Currently, few regulations require sectors or facilities to share their data. KI respondents were hopeful that the *Satu Data* or One Data program—a national program—will help Smart City efforts in data coordination because it will push regulation; also, a centralized directive will require all sectors to share data on one common platform.

Smart programs

Currently, 118 smart programs are being implemented in Makassar, intended to be completed in 2024. The following are examples of programs underway as of mid-2018.

Smart Canteen and Smart Schools

The Department of Education is collaborating with Smart City by piloting “Smart Canteen” and “Smart School” programs. The former ensures that canteens provide nutritious foods, and the latter give parents full information on school attendance for both students and teachers. The respondent who described these programs was unable to provide more detail.

Smart Rukun Tetangga and Rukun Warga

In the Indonesian administrative structure, *kelurahan* is the village level and *kecamatan* is the sub-district level. A *lurah* (which is the administrative title) administers the *kelurahan*. Below the *lurah* are two levels of local administrators: the *rukun warga* (RW) and *rukun tetangga* (RT). The RW is above the RT and is responsible for a larger number of families. One *lurah* interviewed said that “the RT and RW are my eyes since they know what is going on in the neighborhood.” RW and RT are elected. The mayor appoints the *lurah*, who is a civil servant. Through city funds, Smart City has established a Smart RT/RW application and Facebook group, which is a public reporting/complaint redressal system.

IV. Health Engagement

This section discusses how receptive city officials and municipal decision-makers are to taking the available opportunities to improve healthy lifestyles in their communities. Two

ongoing nationally supported government programs in Makassar already take a multisectoral approach to health.

Multisectoral programs on health

Healthy Cities

Following the WHO's adoption, in 1996, of "Healthy Cities for a Better Life" as a way to link urban living with health, in 1998, Indonesia began its own Healthy Cities program in six cities. According to the concept of Healthy Cities, health policy must be seen as a set of processes that raises awareness, mobilizes community participation, and develops multisectoral coordination among local government to encourage the implementation of the WHO's "Health for All" policy at the city level (Kenzer 1999; Palutturi 2013).

Makassar began its Healthy Cities program in 2005. The Planning Department coordinates the program and, within health, the division of Environmental Health, Occupational Health, and Sports Health takes the lead. The mandate of the health department is health promotion and health prevention. A key component of Indonesia's Healthy Cities program is a national award granted each year. Every city is scored on nine components. Makassar has received that award for three consecutive years: 2015, 2016, and 2017. The Healthy Cities program does not have an end date since the activities that are evaluated each year are a regular part of the Department of Health's mandate.

According to KIs, the division involved in the Healthy Cities program had limited connection with the Smart City initiatives in Makassar, no data was currently being shared with Smart City, nor did this division use any data generated by Smart City. Having said that, in Makassar, innovations from any department (including health) are viewed as being a critical part of the Smart City program. Some civil servants are involved in both the Healthy Cities and the Smart City program. Therefore, Smart City programs such as 24-hour homecare, Healthy Alley and Garden Alley are coordinated with the Department of Health officials.

Total Sanitation

Another example of cross-sectoral coordination for better health outcomes is the "Total Sanitation" program that covers open defecation free activities, food security, handwashing, garbage management, and domestic waste water treatment. Again, the coordinating body within health is the division of Environmental Health, Occupational Health, and Sports Health within the Ministry of Health; their mandate is to oversee the environmental hygiene conditions of puskesmas and posyandu.

Department of Education programs on health

A respondent from the Department of Education stated that they had several health-related programs running in schools (e.g., Unilever provided funds to government-run schools to sponsor a handwashing campaign). Other government-run programs included school feeding programs where all primary school children receive milk and

eggs when they come to school, and a vegetable garden grown on school premises as part of the extra-curricular activities of the students; the produce is used in the school canteens.

4. KNOWLEDGE GAPS

The findings from this assessment suggest gaps in information on some key areas affecting health and healthy living in Makassar. The Makassar Smart City program and BHC can explore options for filling these knowledge gaps during the next two years of the project. Knowledge gaps will also be identified in BHC's *Political Economy Analysis* and *Data Use and Access Assessment*, so the gaps included here should be considered in addition to gaps identified by other resources.

I. Quality of Care

Overall, little information was found on the quality of care in Makassar's health sector. The puskesmas and posyandu systems were well-established and well-functioning, but KII respondents agreed that wait times could be long. Staffing shortages were noted at the primary care level. Because individuals were expected to go to designated puskesmas, more research is needed to understand issues with the quality of care. The FGDs and direct observation also revealed parallel systems in private facilities for BPJS cardholders who pay no premiums and private insurance holders (or those who pay higher premiums). Within this area, research is needed on the differentials in quality of care for citizens of different income levels. Findings from such research, with standard health outcome data, can be used to judge what, if anything, needs to be done to adjust trends in care for the urban poor.

II. Health Promotion and Prevention Activities

Research on UKM, which are public health investments in outreach, found that after the introduction of the National Health Insurance program, JKN and BPJS were more focused on curative and rehabilitative medicine (Putri et al. 2018); whereas vertical programs under the Ministry of Health funded health promotion and prevention efforts. This is an important issue to research and follow over time, particularly as the growing burden of NCDs makes outreach, regular screening, and preventive care a critical part of ensuring healthy outcomes in Makassar.

III. Data Quality

Both interview data and a review of the literature suggests key gaps in data quality. One KII respondent said that a report on data collected from puskesmas stated that there were 600 cases for hypertension, but it did not indicate whether the number refers to 600 discrete patients or 600 visits, which would include the same patients. Another KII respondent mentioned that routine health data did not include meaningful causes of mortality (e.g., road accidents is not one of the codes in the mortality surveillance systems, nor is it clear from hospital death records whether the numbers only capture Makassar residents or also those who may have been referred to Makassar from other parts of South Sulawesi or other Eastern provinces). According to KII respondents, Indonesia generally did not have a good civil registration system.

Moreover, a review of the literature revealed that the Ministry of Health's profile for Makassar City for 2016 listed asthma as the leading cause of death. When this information was presented by the BHC interview team during the KIs, all respondents, including those in the Ministry of Health, were baffled.

IV. Confluence of Infrastructure and Behaviors

Clogged, overflowing drains were a critical problem for the urban poor in Makassar who live in flood-prone areas. Knee-deep water inside homes was a common complaint by citizens of one neighborhood that BHC visited. Administrators countered that no matter how often they were told not to, residents continued to dump household garbage into the drains, particularly plastic waste. Therefore, despite their best efforts at regular de-clogging, regular waste collection, and infrastructure upgradation to raise road heights, the problem persisted. More research would be useful to resolve whether the issue is due to the infrastructure of drainage networks, the persistence of negative behaviors, or a combination of the two.

V. Pollution Issues

None of the KI respondents considered air pollution a serious issue for Makassar, with several stating that there were no major factories in the area. Makassar did not have a facility for monitoring air quality at the time of interviews. Indonesia is the world's fifth largest emitter of greenhouse gases and current national development plans are not keeping pace with the global move toward clean energy. Deforestation; peat burning; government plans to build 100 coal-fired power plants; a push to expand palm-oil production and increase local biofuel consumption; expansion of a car-centric transportation infrastructure, including new highways; and booming air travel are just some of the conditions that are pushing Indonesia towards more, not less, emissions (Coca 2018). This has huge implications for public health. More research is needed on why serious attention is not being paid to air pollution in Makassar.

5. CONCLUSIONS

Indonesia is expecting significant population growth—an increase in over 50 million by 2035—that will demand innovative approaches to urban health and well-being. Assessing these approaches requires information to help identify needs, determine the most effective strategies to meet them, and refine these strategies over time. This assessment provides a multisectoral overview of critical issues from multiple stakeholders at various levels. In terms of health, the findings indicate a need to integrate health concerns (including NCDs) within all aspects of planning for Smart Cities and Makassar's future development.

The findings from this assessment will be triangulated with findings from BHC's other studies examining the political economy, and data use and access among Makassar's residents. The studies will be used to help the city government assess vulnerabilities, barriers, and opportunities for improvement.

BHC will work with city officials through 2020 to fill knowledge gaps and identify opportunities for engagement. The project will follow developments on some of the key stories uncovered in assessment interviews and focus groups to understand how life is changing in Makassar, for better or worse. These specific "journeys" will illustrate what problems citizens face, how they are advocating for change, and what barriers and successes the City of Makassar and its Smart City program encounter as they try to solve those problems. This information is intended to illustrate to other Smart Cities how they can grow while maintaining strong systems to continuously improve the health of all their citizens.

REFERENCES

- Banerjee, Abhijit, Amy Filkenstein, Sudarno Sumarto, Rema Hanna, Arianna Ornaghi, and Benjamin Olken. 2017. *Achieving Universal Health Coverage with an Unenforceable Mandate: Evidence from the Government of Indonesia's JKN Mandiri Program*. Nashville, TN: AEA RCT Registry.
- BPJS Health. 2014. "Fund for Capitation of BPJS Received Directly by Puskemas." BPJS Health (blog). May 9, 2014. <https://bpjs-kesehatan.go.id/bpjs/index.php/post/read/2014/77/Dana-Kapitasi-BPJS-Kesehatan-Diterima-Langsung-Puskemas-Layanan-Masyarakat-Akan-Meningkat>
- BPS, BKKBN, Kemenkes, and ICF International. 2012. *Indonesian Demographic and Health Survey*. Jakarta, Indonesia: Statistics Indonesia (Badan Pusat Statistik—BPS), National Population and Family Planning Board (BKKBN), and Kementerian Kesehatan (Kemenkes—MOH), and ICF International.
- Claramita, Mora, Afrainin Syed, Fitriana Murriya Ekawati, and Hari Kusnanto. 2017. *Primary Health Care Systems (PRIMASYS): A Case Study from Indonesia, Abridged Version*. Geneva, Switzerland: World Health Organization.
- Coca, Nithin. 2018. "The Other Country Crucial to Global Climate Goals: Indonesia." *The Diplomat*, March 28, 2018.
- CSIRO (Commonwealth Scientific and Industrial Research Organisation). 2012. *The Impact of Climate Change and Urban Development on Future Water Security and Adaptation Options for Makassar City, Indonesia: A Synthesis of Findings from Climate Adaptation through Sustainable Urban Development Research Project (SUD)*. Canberra, Australia: CSIRO.
- Dewi, Nursila. 2011. *Posyandu: The Power of Women in Community Health*. Health in South-East Asia: Community Health Workforce. New Delhi, India: Regional Office of Southeast Asia, World Health Organization.
- Dwicaksono, Adenantera, Ari Nurman, and Panji Yudha Prasetya. 2012. *JAMKESMAS and District Health Care Insurance Schemes: Assessment Report of 8 Districts/Municipalities and 2 Provinces*. Bandung, Indonesia: International Budget Partnership.
- Government of Makassar City. 2017. *Decree of Makassar Mayor: Pembentukan Dewan Sombere Dan Smart City Makassar Periode 2017-2020*. Number 1172/555.5.05/kep/VII/2017. Makassar, Indonesia: Government of Makassar, 2017. Accessed September 12, 2018. <https://opendata.makassar.go.id/dataset/d9870e56-f913-42fe-867d-06a3bbf23aec/resource/c696ab1a-4f55-4e35-91f4-347034933d04/download/sk-dewan-sombere-smart-city-makassar.pdf>.
- Haryanto, Budi, Budy Resosoedarmo, Sri Tjahjani Budi Utami, Budi Hartono, and Ema Hermawati. 2016. "Effect of Ambient Particulate Matter 2.5

- Micrometer (PM_{2.5}) to Prevalence of Impaired Lung Function and Asthma in Tangerang and Makassar." *Journal of National Public Health* 10 (4): 145–49.
- Health Policy Plus. 2018. "Indonesia Makes Inroads toward Universal Health Coverage through National Health Insurance Program, Paving the Way for Others." *HP + News*, March 19, 2018.
<http://www.healthpolicyplus.com/indonesiaUHC.cfm>.
- Hidayat, Denny. 2018. "Kominfo Kota Makassar," presented at the World Urban Forum, Kuala Lumpur, Malaysia, February 11.
- Jones, Gavin W. 2013. *The 2010 – 2035 Indonesian Population Projection*. Jakarta, Indonesia: UNFPA Indonesia.
- Kenzer, Marina. 1999. "Healthy Cities: A Guide to the Literature." *Environment and Urbanization* 11 (1): 201–20.
- Kotaku Project Implementation Unit. 2015. *City without Slums (Kotaku): An Overview*. Jakarta, Indonesia: Ministry of Public Works and Housing, Directorate General of Human Settlement.
- Mahendradatha, Yodi, Laksono Trisantor, Shita Listyadewi, Prastuti Soewondo, Tiara Marthias, Pandu Harimuti, and John Prawira. 2017. *The Republic of Indonesia Health System Review*. Jakarta, Indonesia: World Health Organization.
- Makassar Regional Public Hospital. N.d. "Inpatient Services." Accessed August 31, 2018. <http://www.rsudkotamakassar.or.id/rawat-inap>.
- Mboi, Nafsiah, Indra Murty Surbakti, Indang Trihandini, Iqbal Elyazar, Karen Houston Smith, Pungkas Bahjuri Ali, Soewarta Kosen, et al. 2018. "On the Road to Universal Health Care in Indonesia, 1990–2016: A Systematic Analysis for the Global Burden of Disease Study 2016." *The Lancet* 392 (10147): 581–91.
- Ministry of Communications and Informatics, PDSI. 2017. "Steps to '100 Smart Cities.'" Accessed November 28, 2017.
https://kominfo.go.id:443/content/detail/11656/langkah-menuju-100-smart-city/0/sorotan_media.
- Ministry of Health of Republic of Indonesia. 2013. "Riset Kesehatan Dasar (RISKESDAS) 2013." Accessed September 12, 2018.
<http://labdata.litbang.depkes.go.id/riset-badan-litbangkes/menu-risikesnas/menu-risikesdas/374-rkd-2013>
- Oberman, Raoul, Richard Dobbs, Arief Budiman, Fraser Thompson, and Morten Rosse. 2012. *The Archipelago Economy: Unleashing Indonesia's Potential*. Washington, D.C.: McKinsey Global Institute.
- Palutturi, Sukri. 2013. "Healthy Cities Implementation in Indonesia: Challenges and Determinants of a Successful Partnership at a Local Government Level." PhD diss. Griffith University. Brisbane, Australia.
- Putri, Likke, Insan Adiwibowo, M. Faozi Kurniawan, Yanti Leosari, Budi Siswoyo, Crista Dewi Shita Dewi, Susan Gigli, Kelley Laird, and Lisa LeRoy. 2018. A

- Regulatory Review Assessing JKN Implementation versus Design*. Bethesda, MD: Health Finance and Governance Project. Bethesda, MD: Abt Associates Inc.
- Santoso, Ambar Dwi, Bonar M. Sinaga, Sri Hartoyo, and M. Parulian Hutagaol. 2017. "Impact of Regional Government Expenditure and Investment on Internal Migration and Economy in Sulawesi Selatan, Indonesia." *International Journal of Sciences: Basic and Applied Research (IJSBAR)* 32 (1): 169–80.
- Schröders, Julia, Stig Wall, Mohammad Hakimi, Fatwa Sari Tetra Dewi, Lars Weinehall, Mark Nichter, Maria Nilsson, Hari Kusnanto, Ekowati Rahajeng, and Nawi Ng. 2017. "How Is Indonesia Coping with Its Epidemic of Chronic Noncommunicable Diseases? A Systematic Review with Meta-Analysis." *PLOS ONE* 12 (6): e0179186.
- Secretariat of Indonesian Medical Council. 2013. *Provincial Health Profile of South Sulawesi*. South Sulawesi, Indonesia: Secretariat of Indonesian Medical Council.
- Suryahadi, Asep, Rizki Fillali, R. Justin Sodo, and Prio Sambodho. 2011. *Addressing Urban Poverty: Increasing Learning on Urban Poverty Reduction in Kota Surakarta and Kota Makassar, Indonesia*. Jakarta, Indonesia: SMERU Research Institute.
- Taylor, John, Omar Saracho, and Ahmad Rifai. 2014. *Makassar, Indonesia: Climate Change Vulnerability Assessment*. Fukuoka, Japan: UN-HABITAT.
- Teerawattanasook, Nittaya, Patricia M. Tauran, Prapit Teparrukkul, Vanaporn Vuthiekanun, David A.B. Dance, Mansyur Arif, and Direk Limmathurotsakul. 2017. "Capacity and Utilization of Blood Cultures in Two Referral Hospitals in Indonesia and Thailand." *American Journal of Tropical Medicine and Hygiene* 97 (4): 1257–61.
- Tjandraatmadja, G., A. Ahmad, M. Selimtung, D. Kirono, S. Larson, D. Salman, R.A. Barkey, et al. 2012. "Context and Challenges in Urban Water and Wastewater Services for Makassar, South Sulawesi, Indonesia." Makassar, Indonesia: CSIRO and AusAid.
- Triwibowo, Darmawan. 2012. *The Role of Strategic Alliances between NGOs and the Local Media in Making Health Services Responsive to the Poor in Makassar City, South Sulawesi Province, Indonesia*. Stockholm, Sweden: International Institute for Democracy and Electoral Assistance.
- U.S. Agency for International Development (USAID) Water. 2016. "Making Sanitation Services Affordable in Indonesia's Cities." Medium (blog). March 16, 2016. <https://medium.com/usaid-global-waters/making-sanitation-services-affordable-in-indonesia-s-cities-5a2621014c1f#.t50pbrpvl>.
- World Health Organization (WHO). 2018. "WHO | Social Determinants of Health." Accessed January 5, 2018.

WHO Regional Office for Europe. 1999. *Healthy Living: What Is a Healthy Lifestyle?* Copenhagen, Denmark: WHO Regional Office for Europe.

ANNEX A: KEY INFORMANT INTERVIEWS AND FOCUS GROUP DISCUSSIONS

Key Informant Interview List (De-identified)

	Type of Respondent	# of Participants	Type of Discussion
	ACADEMIA		
1.	Health	1	Interview
	CIVIL SOCIETY		
2.	Nongovernmental Organization	1	Interview
3.	Nongovernmental Organization	1	Interview
	GOVERNMENT		
4.	Neighborhood Administration	1	Interview
5.	Neighborhood Administration	1	Interview
6.	Civil Registration	1	Interview
7.	Education	1	Interview
8.	Environment and Nature	1	Interview
9.	Garbage	1	Interview
10.	Health	3	Interview
11.	Health	1	Interview
12.	Health	1	Interview
13.	Health Insurance	3	Interview
14.	Public Works	1	Interview
15.	Smart City	4	Interview
16.	Social Department	1	Interview
17.	Traffic	1	Interview
18.	Transportation	6	Interview

	Type of Respondent	# of Participants	Type of Discussion
	HEALTH CARE PROVIDERS		
19.	Charitable Organization	1	Interview
20.	Charitable Organization	2	Interview
21.	Government	4	Interview
22.	Government	1	Interview
23.	Private	3	Interview
24.	Private in Partnership with Government	2	Interview

Typology of Resident Focus Group Discussions

1. Densely populated area, majority of the population is stable, with a mix of migrants from other parts of Indonesia. The majority are informally employed in service sector or daily wage labor. The stable population has housing rights, migrant populations are primarily renters. Infrastructure concerns are around regular water supply, clogged drains, and flooding, especially during the rainy season. Access to health services is good for those with National ID cards, with Makassar residency, or those with BPJS cards.

2. Old-time residents of Makassar, majority are in service sector or daily wage labor, stable housing rights, not overly populated, surrounded by middle class neighborhood. Housing structures range from solid to hutments. Good access to services.

3. Apartment building with security guards in the center of town for upper income residents. Professionals, mostly living alone and away from their families because of jobs in various industries, including oil industry, health care sector, NGO sector. Good access to all city services.

ANNEX B: MAKASSAR SOMBERE AND SMART CITY FRAMEWORK

Masterplan Framework of Makassar Sombere and Smart City

Vision (goal)	To Create Makassar As A Livable world class city for all					
Mission	Bureaucracy Reform	City Spatial Plan Restoration		Reconstruct Society Destiny		
Smart city components	Smart Governance	Smart Branding	Smart Economy	Smart Living	Smart Society	Smart Environment
8 ways to the future	1. Reduction of Unemployment (& fee for work) 2. Universal Social/Health Insurance 3. Free Emergency Medical Service 4. Improving Skilled workforce (Free Educational Savings & Free Skills Training) 5. Reducing Trash/Increasing food safety net (Trash for Rice) 6. Affordable City Housing 7. Living Green with Foliage	2. Addressing main city problems (flooding, etc.) 2. Forming city development council 3. Build water front city 4. Provide accessible public transportation 5. Develop accessible city infrastructure 6. Countryside development 7. Thematic park development 8. Lane (Lorong) arrangement.		1. Increase city income 2. Improve work performance of RT/RW 3. Improve service in the village (kelurahan) 4. To modernize tax and distribution service 5. Internet access development in the public space in sub-district 6. Strengthen Regional Owned Enterprises (BUMD)		
Driver	Public service, bureaucracy, tourism, creative industry, welfare, health, transportation, community, education, environment, energy efficiency.					
	1. Integrated City Management and interoperability by using ICT (Public Service) 2. Efficient bureaucracy management (efficient e-governance) 3. Develop service system, network and security assurance (Infrastructure Development, security and assurance)					

Building Healthy Cities

Vision (goal)	To Create Makassar As A Livable world class city for all
Target	4. Build and Market Tourism destination (Tourism Branding)
	5. Strengthening Business or local top brand product (Business Branding)
	6. Building a City architecture characterized sombere (Sociable) as a local wisdom character (City Appearance Branding)
	7. Building a creative and competitive ecosystem based on ICT (creative industry)
	8. Improving welfare (welfare)
	9. Building electronic transaction ecosystem (e-Transaction)
	10. Integrated spatial planning
	11. Building a high quality of health care system
	12. Building an integrated transportation system
	13. Religious community
	14. Building high literacy community (education)
	15. Creating a community security system
	16. Program for Developing Environmental Protection (Environmental Protection)
	17. Developing Waste Management (Waste)
	18. Implementing Energy Efficiency (Energy Efficient)

Smart City Program Breakdown

No.	Smart City Component	Target	Program
1	Smart Governance	1. Integrated City Management and interoperability by using ICT (Public Service) 2. Efficient bureaucracy management (efficient e-governance) 3. Develop service system, network and security assurance (Infrastructure Development, security and assurance)	1. Open data platform
			2. NTPD Service 112
			3. Information System of Regional Development Planning, Makassar (SIPPD)
			4. Musrenbang (Bottom-Up decision-making) Information system (E-Musrempang)
			5. E-Sakip (government performances report)
			6. SIMBAKDA (Regional property Management information system)
			7. SIAK (Accounting Information System)
			8. E-Budgeting
			9. Online Financial Management Information System
			10. SIMPEG (City Officer Management System)

Building Healthy Cities

No.	Smart City Component	Target	Program
			11. Real Time Attendance Management System (SMART) through Face Scan
			12. Smart BKPSDMD (City officer absence system)
			13. Big Data
			14. PPDB (student admission system)-Based accreditation
			15. Public Test of Mayor Regulation draft
			16. Online SKT (registered letter) Service
			17. Licensing Information Service Card
			18. One gate system for permission letter
			19. Mobile Service of "KUPAS" (civil and registration document)" for vulnerable and disability population
			20. SIMATA (Land Asset Management Information System)
			21. Promotion Service (PKP) for Tamalate Sub-District officers
			22. Digital archives
			23. Licensing Service Information System
			24. Stakeholder Collaboration for Mangrove Conservation in Makassar City
			25. Garbage Retribution Management Information System
2	Smart Branding	1. Build and Market Tourism destination (Tourism Branding) 2. Strengthening Business or local top brand product (Business Branding) 3. Building a City architecture characterized sombere (Sociable) as a local wisdom character (City Appearance Branding)	1. Job Info Aps 2. Women Movers 3. Makassar Monthly Event innovation 4. Greeting for Tourist 5. Tourism employer information system 6. Smart Library Card 7. Mobile library 8. Civil Service Police for Tourism 9. Garbage bank tourism 10. Small and medium industry festival 11. Small and Medium industry gallery

Building Healthy Cities

No.	Smart City Component	Target	Program
			12. ASCOP (Answer the Smart Public Complaint)
			13. E-Public Documentary
			14. Makassar sombere and smart city Website
3	Smart Economy	1. Building a creative and competitive ecosystem based on ICT (creative industry) 2. Improving welfare (welfare) 3. Building electronic transaction ecosystem (e-Transaction)	1. Integrated On-Line Tax Service System (SIPAKATAU)
			2. Tax Warrior
			3. E-Tax
			4. Online Small and Medium industry (UKM) Gallery
			5. UKM cart
			6. UKM alleys
			7. E-Service Corner
			8. E- Information
			9. Garbage bank
			10. Chinatown Culinary Market
			11. Garbage Bank Savings (TANGKASA'RONG): From the community, by the community and for the Community
			12. Makassar New Waterfront City
			13. Application-based consumer complaint information system
			14. SIHBAKO TA '(Information System for groceries Price)
			15. The youth empowerment
			16. Women Empowerment through Peeling Cashew Program
			17. Garbage Bank (E-commerce Aps)
			18. E-Commerce aps for Hawkers
4	Smart Living	1. Integrated spatial planning 2. Building a high quality of health care system 3. Building an integrated transportation system	1. Carester and Digital Trungking Systems
			2. Disaster Response system
			3. SMART city transport
			4. School Transportation
			5. E-Nassami (student apps)
			6. Modtrap goes to School

Building Healthy Cities

No.	Smart City Component	Target	Program
			7. Transport Blogger
			8. Safety campaign in school bus
			9. Smart Traffic Light
			10. LANCARMA (Makassar Smart Traffic system)
			11. Smart CCTV
			12. Traffic light information system
			13. Big Data: Open Data, War room Integration data, Operation Room
5	Smart Society	1. Religious community	1. Touching heart (public engagement program)
		2. Building high literacy community (education)	2. Online based for Community Aspirations (AJAMMA)
		3. Creating a community security system	3. Data Center for Reporting and Planning (educational department)
			4. Integrated data for Teachers (Educational department)
			5. Innovation Laboratory
			6. Online Scientific Journal
			7. Intellectual property (HAKI) Innovation
			8. Makassar Technopark
			9. Digital Library
			10. Home Care (Dottorota)
			11. Fast Emergency response
			12. Man Center (to deal with erectile dysfunction)
			13. SIKAPULUNG (Village security monitoring system)
			14. Birth control lane
			15. 10,000 Certified Handicraftsmen
			16. Social welfare improvement program
			17. A'Golorong Makassar Indonesia (Indonesia Street Super Soccer)
			18. Moral enhancement program
			19. Keep City program
			20. Friday Alms movement

Building Healthy Cities

No.	Smart City Component	Target	Program
			21. Sombere (friendly) Room
6	Smart Environment	1. Program for Developing Environmental Protection (Environmental Protection) 2. Developing Waste and Waste Management (Waste) 3. Implementing Energy Efficiency (Energy Efficient)	1. Healthy alley
			2. Air Quality Monitoring
			3. Drinking water
			4. Zero puddle
			5. Sweeping hole movement
			7. Pangasseng Card (for public work department)
			7. Free Wi-Fi area
			8. GIS-based slum map
			9. Alley Apartment (APARONG)
			10. Mapping fire area
			11. BALAKAR (Fire Army Aid) program
			12. Community Shelter (for maternal and child protection)
			13. Green alley
			14. Makassar Clean city
			15. SMART RT
			16. Recycling Corner
			17. Mobile public Service
			18. Healthy alley Community
			19. Empowering Coastal Communities
			20. Environmental Arrangement (by communities)
			21. Vegetable Garden
			22. Hydroponic alley
			23. Garbage Boat
			24. Heart-Touch Movement (by Dialogue / Discussion)
			25. Smart Panakukang
			26. Culture Alley

Source: "Masterplan Smart City Kota Makassar [Masterplan Smart City Makassar City]" 2017. Translated from Bahasa.

BUILDING HEALTHY CITIES



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